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rest and our feet were very sore from making toe-holds in the hard snow.

But we had stood on the peak of Mt. Robson, and the struggle had been a desperate one. Three times we had made two-day climbs up Mt. Robson, spending ninety-six hours in all, above 10,000 feet altitude, so far north. During the twenty days we were at Camp Robson we captured five virgin peaks, including Mt. Robson, and made twenty-three big climbs.

I had now only one horse left, for the other one that I had brought in had caught swamp fever on the trail and now his bones bleach under the cliffs of the north shoulder of Mt. Robson. We caught our horse the next day, and with many a backward look at the conquered peak glistening in a clear sky, we left that scene of so many battles and still wondered at our victory. For days we had to live on what gophers and birds we could get, for we were out of other provisions.

On the Athabasca we met the members of the British Alpine party going in to the mountain, and received their hearty congratulations. Unfortunately weather conditions prevented these courageous men from also capturing the peak.

Others will doubtless some day stand on Mt. Robson's lonely peak; but they who conquer its rugged crags, will ever after cherish in their hearts a due respect and veneration for its mighty solitudes.

AN UNKNOWN FIELD IN AMERICAN ARCHÆOLOGY

BY

HARLAN I. SMITH

The unknown field in North American archæology is far greater in area than the known field. Nothing is understood of the life of the prehistoric people, the direction from which they came, or when they arrived, in a portion of the United States and Canada larger than all the rest of those countries. This area stretches from the Gulf of Mexico to the Arctic Ocean and occupies most of the country between the Mississippi valley and the Coast Range. It includes the Mackenzie basin, the Barren Lands and the great plains. In

the United States, eastern Washington, Oregon, and California, all of Idaho, Montana, Wyoming and Nevada, northern Utah and Colorado, all of Texas but the eastern edge, most of Oklahoma, Kansas, and Nebraska and the western part of the Dakotas belong to this region which we may popularly term darkest archæological America.

Remains indicating the presence of man in America at the close of the glacial period or other very early times have been reported from various places in the country, but none of them is as yet fully established to the satisfaction of all archæologists. Near Trenton, N. J., many rudely chipped stone objects which have been termed "palæolithic implements" and bones of animals no longer native to the temperate regions (as well as of man), which were thought to bear marks of human handiwork, have been found in what was supposed to be undisturbed glacial deposits.

Among several reported finds in Ohio I may mention similar "palæolithic implements" reported by Mills and Metz. Such stones were reported by Cresson from Indiana and by Miss Babbitt from Minnesota. The human bones found at Lansing, Kansas, and near Omaha, Nebraska, known respectively as the "Lansing Man" and the "Nebraska Man" are not yet accepted by all, but are considered as probably of comparatively recent Indians.

A human figurine, said to have been taken from an artesian well in Idaho, for a time excited attention. The "Calaveras Skull," a human skull found in a cave in Calaveras Co., Cal., for years was considered as conclusive evidence of the great antiquity of man. Bones, some of which are thought to have been carved, associated with remains of extinct animals in another cave in California have been examined by St. Clair and Putnam.

Archæologists as a class may be said to await proof of the great antiquity of man in America. Consequently as all these reports, with the exception of that of the Idaho image, came from the smaller or archæologically known part of the country and they all together have not established the question, there is all the more reason to desire information from the larger or unknown part of North America.

When this vast region was first visited by white people it was found to be inhabited by certain Indian tribes whose languages differed as much from one another as French from Spanish, and between some of the languages there was the same affiliation as we find between these tongues. Students have come to group them

into linguistic stocks, just as those two European languages are grouped under the Aryan stock. The languages of one stock differ from those of another, just as the Spanish does from Turkish. It so happens that this area includes part of the territory inhabited by the tribes of the Algonquian and Caddoan linguistic stocks, and all of the country of the Kiowan and Kitunahan linguistic stocks. But the Athapascan, Siouan and Shoshonian peoples occupied the greater part of the area and it is also true that the greater part of their country lay within the borders of this unknown territory. To know the early history of these great groups of entirely different peoples we must know the archæology of that part of the country.

As there were differences in language so there were differences in life or material culture. This was partly due to the effect of environment. There are among these cultures those of the eastern forest, the Arctic seacoast, the Barren Lands, the plateaus, the plains and the arid southwest. Part of these areas are included in the unknown region, while all here mentioned extend into it. A knowledge of how the cultures within the unknown area developed can only be obtained by archæological explorations, and to know the limits of the other cultures above mentioned it will be necessary to prospect out into the unknown region.

The plains which may be considered the nucleus of the unknown territory may hold the key to the whole situation. In historic times they have been inhabited by nomadic peoples. Tribes of the eastern forest culture, such as the Blackfeet, have migrated into them and become nomadic.

In the early days the peoples of the plains had only the dog as a domesticated beast of burden and draft. True, the horse developed from a little five toed creature to a splendid animal somewhat resembling our modern horse in this area, but, according to present scientific belief, he became extinct before man appeared in this country. When the white people first saw the Indians of the plains they had great numbers of horses and may be said to have had a horse culture. But these horses they obtained overland in one way or another, after the Spaniards had brought this animal to America. The horse must have greatly effected their culture, allowing them to travel farther, hunt the buffalo with greater success, migrate more easily and obtain and transport more property. The story of how these people lived before they had horses and the history of the change from a culture where they had only the dog, to one almost

dependent on the horse cannot be fully known without archæological research in the great plains.

The plains formerly supported immense herds of buffalo. It is said that there were more buffalo killed on the plains in ten years than there are people in England. Now they are found only in public or private parks, and a society has been formed to prevent their extinction. The culture of the plains people depended perhaps even more upon the buffalo than it did upon the dog or horse. Zoologists have determined the former range of the buffalo and it will be of considerable interest and importance to ascertain whether or not the culture of the buffalo area was of one sort throughout, due to this animal and if the culture immediately outside of the buffalo area was of an entirely different sort.

Corn was raised throughout the eastern part of the United States and Canada as far north as the climate would permit and for some distance westward out on the plains. Curiously enough pottery is found to have been made wherever corn was raised in the United States. This territory also includes the irrigated fields of the desert region of the southwest. On the other hand no pottery is found in British Columbia, Washington, Oregon and the vast bordering region. The unknown archæological area lying between this Pacific coast country and the regions where corn and pottery were abundant, of course, holds the key to the limits of the territory where the potter's art was known in this part of the world.

The material culture of the country to the east of this vast neglected area is fairly well known. Immediately adjacent in the great Mississippi valley was a sedentary agricultural people who also depended upon certain wild plant products and largely upon game and fish.

The archæology of the eastern region in general is characterized by many well known objects.

The prehistoric culture of the Cliff Dwelling and Pueblo area of the southwest is also well known, although our knowledge of it has been gained chiefly during the past thirty years. Even though a desert country, its culture was agricultural and its people even more sedentary than some of those in the Mississippi valley. It may be said to be characterized by flat topped stone and adobe buildings, the best pottery found north of Mexico and irrigation projects.

To the west, the culture of the Santa Barbara region of California is well represented in our museums.

Northwest of the unknown region are the plateaus of British Columbia and Washington, the native culture of which we know. Here the people depended upon many resources, lived in small villages composed of individual houses and depended chiefly upon hunting and fishing for subsistence.

The part of the vast unknown archæological area which interests us most, is that which lies in our own country, partly from patriotic reasons and partly because the colder northern region would seem to promise meager results and even more extensive stretches between the sites of antiquities than are found in the plains.

Wyoming, near the center of that part of the unknown region lying in the United States, includes the head waters of the Snake, which passes through the northwest plateau country; the Colorado, which cuts through the Pueblo region, and the Platte, whose waters descend to the Mississippi valley. If the three cultures found lower down in these valleys occupied the entire drainage basin of each, Wyoming would certainly hold the key to the problem, and it was partly for this reason that I selected the south and east part of that State for the field of my first trips of reconnoissance into the great unknown archæological area. These trips were made under the auspices of the American Museum of Natural History in 1907 and 1908.

While Wyoming is not the largest of the States in the unknown area and is a mere speck compared with the whole, if superimposed on a part of the Middle Atlantic states where thousands of dollars and years of effort have been spent in archæological research, we find that it is larger than Massachusetts, Rhode Island, Connecticut, and New Jersey, parts of New Hampshire, Vermont, New York, Pennsylvania, Maryland and Delaware, with a goodly portion of the Atlantic ocean thrown in. So it would seem that if New Jersey or Connecticut both deserved extensive exploration, this larger State had been neglected long enough.

My route in 1907 lay along the line of the Chicago and Northwestern R.R. from east to west across the middle of the State. This was in the Platte valley and with the railroad as a base, side trips were made on foot, with saddle horses and with mountain wagons. From the western terminus of the railroad the route lay across the continental divide, through the Red Desert, southwestward to the Union Pacific Railroad. From here horses took us to various points up and down the Green River valley and the railroad was again

used as a base in recrossing the State parallel to, but further south than our former route. In 1908 I went by wagon from Raw Hide Buttes to the Black Hills. Then westward to the Big Horn Mountains and southwest to Casper; thus circling the northeastern part of the State.

The southern and eastern parts of Wyoming are an arid, rolling country, cut by many cañons, most of which are dry and are practically treeless, except for willows and cottonwoods in some of the bottomlands, or pines and cedars on a few of the hills. The cowboy well describes it by saying:

"There are more cows and less butter, more creeks and less water, and you can see farther and see less than in any other part of the country."

The results of our expeditions include the discovery of a new form of steatite pot, quite as different from the type found on the Atlantic seaboard as from those of California; several boxes of specimens; over a gross of photographs showing the country, and its antiquities; and a knowledge of the distribution of archæological forms and sites.

The chief antiquities of the region consist of hundreds of circles of stones marking ancient lodge sites, principally in the east; prehistoric quarries, some of them covering acres in the east and petroglyphs especially in the north and west. The circles of stone instead of being in the river bottoms, as are the village sites of the Mississippi valley, are usually on high ridges but near a stream or spring. Sometimes a single circle is seen, again there are whole villages indicated by them. There is nothing to prove the age of these circles except that most, if not all, of the stones are sunk some distance into the soil. The modern Blackfeet, living in Montana, use stones to hold down the edges of their tipis, while the Shoshone, in western Wyoming, as a rule, do not. This may account for the scarcity of stone tipis circles in western Wyoming. An occasional saucer-shaped depression in the earth, probably also a mark of tipis sites of a people with practices like the modern Shoshone, was also seen.

The quarries, each of which covered several acres, were found in many places in the Platte valley. Those locally known as the "Spanish Diggings" because once attributed to early Spanish gold miners, have been known for some time, but others are new to science. The quarries are marked by pits dug down through the earth to get the quartzite and jasper desired as material for chipping

into points for arrows, scrapers, knives and possibly other forms of implements. Arrow points are found scattered over the whole country and sheep herders amuse themselves by collecting them, while scrapers are very numerous among tipis circles. Lying about the pits are, occasionally, river pebbles which have been battered from use as hammers in the quarrying operations. Some of them have grooves pecked around the middle where a handle could have been bound on. One of these was photographed before it was picked up from the ground where it lay among the quarry refuse, broken out by it or by similar pebbles. Such pebbles are not found scattered about over this quarry country and must have been brought some distance from the river valleys. At each quarry are actually train loads of rock which have been broken out by these stone hammers and from most of it has been trimmed the poorer material which would not do for the making of implements. In this trimming process there have been left carloads of almond-shaped pieces from four to twelve inches in length, chipped in such a way that they have a cutting edge all around and if any of the poorer rock remains it is in the middle of the flat sides. These are the natural results of the best way which primitive people have of chipping the poor material from a block of rock. They resemble "paleolithic implements," but their surfaces do not bear as much patina, that is, they are not so much decayed or weathered. They also resemble unfinished implements, such as are found among the quarry rejects of the eastern United States, but they are probably either pieces of rock suitable for the making of implements which have assumed this form in the process of freeing them from the unsuitable rock, or they may be cores from which first the unsuitable rock has been chipped and then many chips have been taken off for transportation to the home of the quarryman.

That the rock was not extensively worked into chipped implements at the quarries is indicated by the scarcity of small flakes and finished implements in their vicinity. The scrapers in the tipis circles are about the only finished implements commonly found and this is probably because the women were busy tanning the skins of antelope and buffalo, animals formerly numerous here, while the men were occupied at the quarries. The vicinity is so desolate and water so scarce that when not engaged in quarrying or hunting these animals the people probably lived elsewhere. There is no great accumulation of village refuse to indicate long habitation near the quarries.

The antiquity of these quarries goes back to times before historic record in this region, which began about a century ago. The absence of objects made by white people, such as implements of iron or glass beads, shows that it was before the Indians had much contact with our people, but nothing has thus far been found to indicate their remote antiquity.

A fragment of an arrow shaft smoother was found near Lusk, in the eastern part of the State. It will be remembered that these are common in the northwest plateau region, the Pueblo country, and have been found in Nebraska, so that we might expect to find them among antiquities in this middle region, especially since some of the modern Indians here have used them.

Large flat grindstones or lower handmills with small grinders or upper handmills, like the metates of the Pueblo country, are found through southern Wyoming, but are perhaps more numerous in the western part which is in the same drainage basin as the Pueblos. They certainly remind one of the Pueblo culture, and this type of them is unknown in America north of southern Wyoming.

The historic plains tribes customarily boiled their food by dropping hot stones into a buffalo paunch containing it. But the fact that they also used stone pots accounts satisfactorily for the numbers which we saw. As before mentioned, they are of a shape new to science, unlike the trough-shaped dishes of the east and the globular ollas of California, some being of the form of an egg with the tip of the larger end removed, others of a steep truncated pyramid with rounded corners and bulging sides, while others are somewhat of the latter form, but longer than they are wide.

Pottery was not extensively made here, resort to paunch boiling or steatite pots no doubt taking its place. We found it only near Raw Hide Buttes on the trip and learned of its occurrence at only eight places. All these were in the southern part of the State. Some of the pottery which we saw somewhat resembles that of the Cliff Dwelling country immediately to the south. The northern limit of pottery in this longitude is probably marked by these eight finds. It will be remembered that pottery is not found farther north of this in any of the country to the west, except in a small region near the Yukon, which it may have reached from Siberia, but in the Mississippi valley it is found as far north as maize was planted and as far northwest as Mandan, Dakota.

One of the pieces of pottery is of especial interest. It is in the

possession of a druggist living at Douglas. It was found in a cave some miles south of that city and strongly reminds us of the coiled ware of the Pueblo country. Close examination, however, especially where it was broken and could be seen in cross section, convinced me that it had been molded in a basket. It is one of the two best examples of pottery made in a basket that I have seen. The top of the pot being smaller than the body, it could not have been taken out of the basket, which must have been burned in firing the jar.

A number of caves were seen both in the eastern and western parts of the State. Some in each region had been barricaded with poles, which had been preserved by the dry climate and appeared very ancient. They were lashed together with withes. In one of the caves in eastern Wyoming was a great accumulation of *débris*, and in front of it were tipis circles and more evidence of village *débris* than I saw elsewhere in the State. The top of the refuse in the cave was strewn with the bones of sheep and cattle, probably dragged there recently by wild animals. The presence of pictographs near the cave and of the unusual traces of habitation in front of it, led me to believe that the lower layers of cave refuse might contain human remains or manufactures, thus holding evidence for a knowledge of these Wyoming cave dwellers. For this reason I have recommended the caves as one of the more promising fields for future exploration.

A boulder mosaic, representing a human figure, many feet in length, as indicated by boulders placed on the ground, has been described by visitors to the "Spanish Diggings" country. Such figures are well known in Dakota.

Lines, some many miles in extent, are formed usually by single boulders or little piles of stones, although in one case the piles were rather large. These were found, in a number of places mostly in the eastern part of the State and their use has given rise to much speculation. Some consider them to mark boundary lines, others to indicate trails across the prairies, or guiding decoys for the capture of buffalo.

A few graves, covered with stones, have been found in Converse Co. and similar stone piles have been excavated but found to cover only bits of charcoal. Small piles of stone sometimes found in the center of tipis circles are scorched upon the lower side and are supposed to mark fire places.

A stone "fort," so called for want of a better name, was seen and

photographed on top of one of the Raw Hide Buttes. It consists of two walls of rock crossing a narrow defile on top of the butte, but whether this was made by prehistoric Indians or early white visitors to the region is unknown. A single wall or pile of rocks crosses the same defile at two points further along on the butte.

Petroglyphs are found in both the eastern and western parts of the State and pictographs, both red and black, occur in the Wind River country. We saw only one set of petroglyphs in the southeastern part of the State. These were near the cave previously mentioned. They were in the area formerly inhabited by Caddoan tribes. In the vicinity there lived the Arapahoes of the Algonkin stock who formerly inhabited the wooded area to the northeast. There were three of these representing human forms scratched in the red sandstone. They resemble in character the birch bark pictographs of eastern Algonkin forest tribes. In the western part of the State petroglyphs are of two kinds; one, pecked or bruised so as to make a fresh mark upon the surface of weathered basaltic rock, the other scratched and pecked intaglio in the sandstone. Some of the latter seem to be recently made, while some of the former appear very old. The first kind may be of Shoshonean origin; the second resemble in character the pictures painted on skins by recent plains tribes. The horse is frequently represented in the characteristic conventional style of the plains Indians and one picture of a buffalo is rather striking. The Arapaho, who adopted the prairie culture since their migration to the plains, were removed to this region by the United States government and now live side by side with Shoshones.

The eastern part of Wyoming seems to have been more thickly settled in primitive times than the middle or even the Green river valley of the western part. Signs of man, especially petroglyphs, are numerous in the Wind river country. The continental divide in the region of South Pass does not seem to be what would have been much of a barrier for primitive peoples. I have a suspicion that the remains in the eastern part of the State belong to the western parts of an ancient plains culture. Those in the west probably belong to a type of culture which came, transmitted over the continental divide, from the Pacific drainage.

The pottery and metates, found in the middle part of the State, seem to attest that Cliff Dwelling influence extended to this vicinity.

An archæological reconnaissance across the northwestern part of

the State would do much to settle these questions, while an exploration of the caves in the east and the photographing of all the petroglyphs of which we heard in the west so that a comparative study could be made of them, would give us a more detailed understanding than can be had from a mere reconnaissance. One of the problems of most interest to ethnologists is whether the plains have been inhabited for any considerable number of years, say before the introduction of the modern horse. An exploration of the caves may throw light on this problem, but in all this work of determining the location, character and age of cultures there must be co-operation between archæologists, geologists, linguists, ethnologists and students of mythology and tradition.

KORDOFAN

Kordofan is the large Province of the Anglo-Egyptian Sudan between the Nile and Darfur. Knowledge of this large region was quite imperfect until the British ended the régime of the Mahdi in 1899. Since that time the British have traversed the country in all directions and have made a map of a large part of the province on a scale of 1:250,000 which gives a very good idea of it, though the map is not based on triangulation.

Captain Watkiss Lloyd, recently governor of Kordofan, has an article on this large region in the *Geographical Journal* (March, 1910, pp. 249-267, map and illustrations), in which he contributes many new facts to our knowledge of Kordofan. The following data are taken from his paper:

The province includes about 130,000 square miles with an estimated population of about 500,000. It extends about 400 miles N. and S. and 350 miles E. and W. It is naturally divided into two parts, North and South Kordofan, the dividing line extending obliquely from lat. 12° N., on the frontier of Darfur, to lat. 13° N. on the White Nile.

North Kordofan consists of plains, generally sandy, formed by the disintegration of granite and sandstone hills and broken in the north by clusters of granite hills. North of lat. 14° 30' N., the plains are often stony and broken by many wadis, the streams losing themselves in the sand or forming small lakes that dry up after the